The Success of an Employer On-Site Physical Therapy Program

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Objectives

- Introduction
- Rationale for Physical Therapist in Industry
- Evidence Supporting Onsite Physical Therapy
- Three Important Principles
- Early Reporting/Early Intervention
- Company A - Success Story
- Case Study – Early Intervention for Low Back Pain
- Examples of Ergonomics Fixes
- Advantages and Disadvantages of PT



BROADWAY ERGONOMICS
Physical Therapy. Wellness. Performance.

Why Physical Therapists in Industry?

- Physical Therapists provide care in a variety of settings – hospital, clinic, nursing home and industrial settings
- PT's have doctoral level training rich in biomechanics, anatomy, musculoskeletal, medicine and psychology
- PT's typically have vast experience treating musculoskeletal disorders including: Low back pain, neck pain, knee pain, rotator cuff disorders and carpal tunnel syndrome, etc.

Why Physical Therapists in Industry?

- Physical Therapists specialize in pediatrics, sports medicine, geriatrics, rehabilitation, general medicine, orthopedics, and industrial/occupational health
- Board certification verifies this – OCS, SCS, PCS, GCS – but none *yet* for industrial
- Board Certified PT's demonstrate knowledge of musculoskeletal medicine nearly equal to that of orthopedic surgeons

Childs J, et al. A description of physical therapists' knowledge in managing musculoskeletal conditions. BMC Musculoskeletal Disorders. 2005; 6:32, http://www.biomedcentral.com/1471-2474/6/32

2017 Liberty Mutual Workplace Safety Index

Top 10 Causes and Direct Costs of the Most Disabling U.S. Workplace Injuries[1,2]

Why Physical Therapists in Industry?

- The APTA Guide to Physical Therapy Practice describes practice on-site in employment settings as one form of PT practice. According to the Guide, "Physical therapists also provide primary care in industrial or workplace settings, in which they manage the occupational health services provided to employees and help prevent injury by designing or redesigning the work environment. These services focus both on the individual and on the environment to ensure comprehensive and appropriate intervention."

American Physical Therapy Association. Guide to Physical Therapist Practice – Who Are Physical Therapists? http://guidetoptpractice.apta.org/content/1/SEC2.body. Published February 4, 2010. Accessed July 10,2014.

Need for Ergonomics

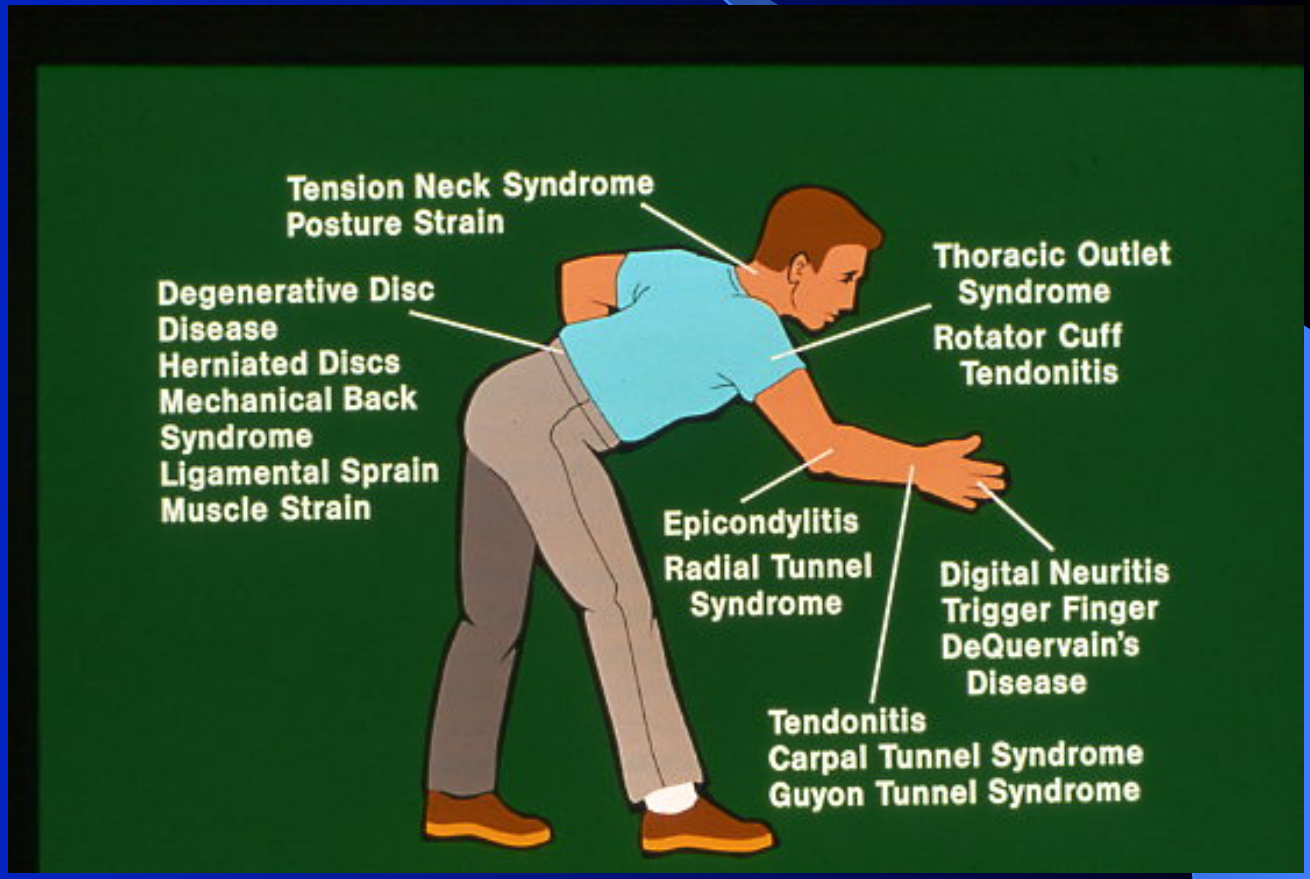
- High workers compensation costs
- Aging workforce
- Short and Long Term Disability
- Improve business competitiveness
- Optimize productivity
- Employee Retention
- ADA Accommodation

ADA Accommodation

- Aging workforce = Greater disability
- Older workforce = People work longer
- Females much greater percentage of workforce
- Obesity
- Greater awareness of disability issues
- Tougher federal ADA laws since 2008

Work Related Musculoskeletal Disorders

- Can occur in :
  - Wrists
  - Elbows
  - Shoulders
  - Back
  - Neck
  - Hips
  - Knees
  - Ankles



Evidence Supporting On-Site Physical Therapy

- OSHA Ergo Meat packing
  - Effective medical management one of four main elements
  - Employees should have access to experienced healthcare providers
  - Screen, Triage and Treat MSD's
  - Participate in Ergo, Light Duty and Employee return to work post injury

Occupational Safety and Health Administration, Ergonomics Program Management Guidelines for Meatpacking Plants. https://www.osha.gov/Publications/OSHA3123/3123.html. Published 1993. Accessed July 10, 2014

Evidence Supporting On-site PT

- OSHA Poultry Guidelines
  - Early Intervention
    - Limit severity
    - Improve treatment effectiveness
    - Reduce disability
    - Reduce workers compensation costs

Occupational Safety and Health Administration, Prevention of Musculoskeletal Injuries in Poultry Processing, 3123. https://www.osha.gov/Publications/OSHA3213.pdf. Published 2013. Accessed July 10, 2014.

Value of Early PT in LBP

- Gelhorn, Spine, April 2012 – Management Patterns in Acute Low Back Pain
- "There was a significant reduction in the likelihood of undergoing subsequent surgery, injection and specialist visits in the group of patients who received PT in either the acute or subacute phase, as compared with those receiving PT in the chronic phase."

Gelhorn AC, Chan L, Martin B. Management Patterns in Acute Low Back Pain: the role of physical therapy. Spine 2012 Vol. 37 (9); 775-782. doi: 10.1097/BRS.0b013e3181d79a09

Evidence Supporting on-site PT

- Pransky et al
  - HCP's practicing as return to work coordinators
  - Significant decreases
    - Lost time
    - Reduced duration of work disability
    - Reduced long term disability costs
    - Reduced workers compensation costs
    - Ergonomic consultations, modified duty, mediation between worker and supervisor

Shaw W, Hong Q, Pransky G, Loisel P. A Literature Review Describing the Role of Return-to-Work Coordinators in Trial Programs and Interventions Designed to Prevent Workplace Disability. *J Occup Rehabil*. 2008; Vol 18: 2 – 15/ doi 10.1007/ s10926-007-9115-y.

Barriers to Return-to-Work

- Isernhagen
  - Our medical system is designed to treat patients not workers
  - This mind-set prolongs recovery and fuels disability
  - Focus on work abilities rather than restrictions
  - Avoid the shift from worker role to injured patient

Isernhagen S. Back to Original Job: Less Light-Duty Days Through Job-Specific Testing. The Journal of Workers Compensation. 2006; 15 (4).

Three Important Principles

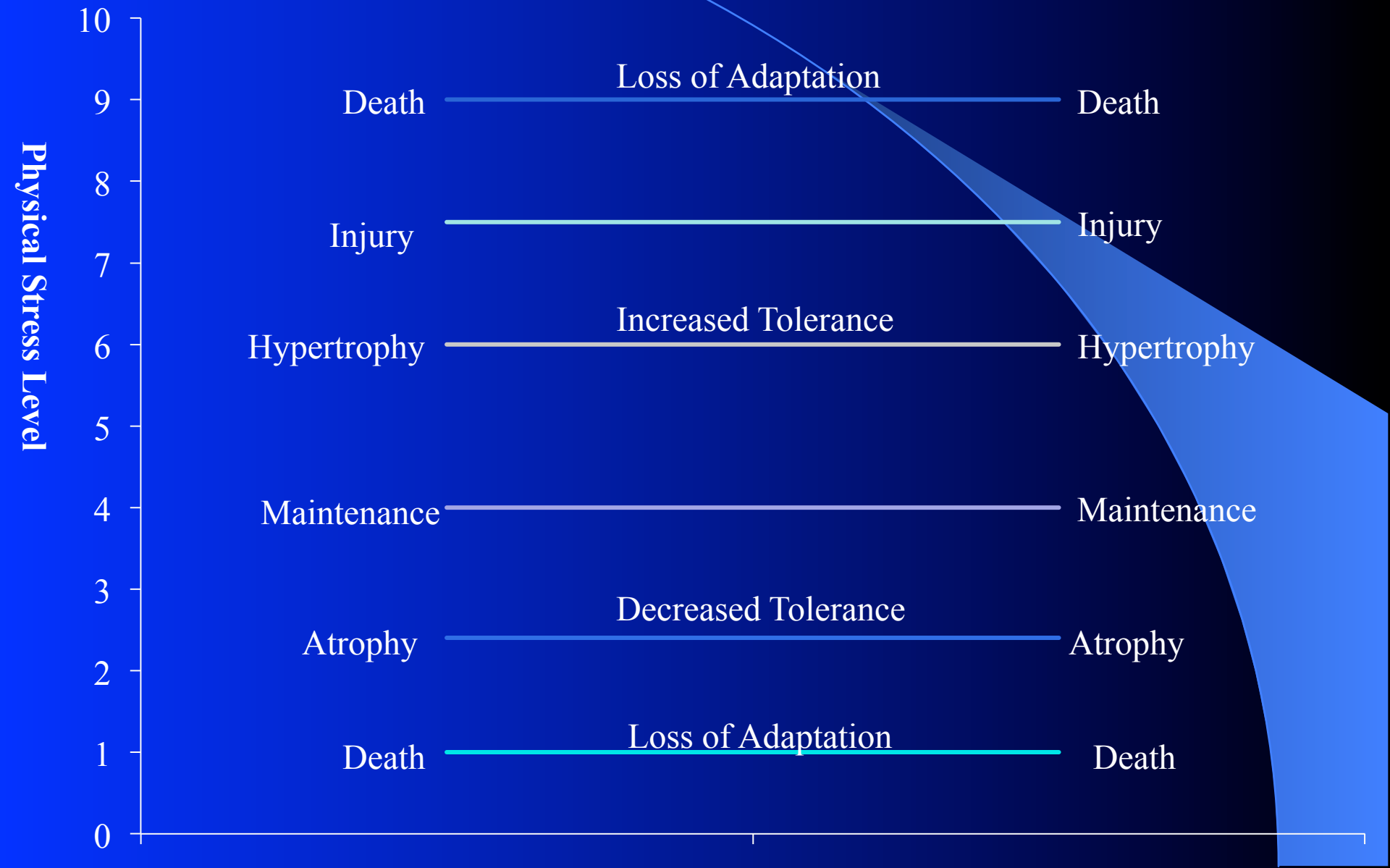
- Physical Stress Theory
- Psychosocial Environment
- Early Injury Reporting

Physical Stress Theory

- Physical stress produces different effects on the body depending on dose and tolerance
- Optimal physical stress produces hypertrophy/strengthening
- Excessive physical stress produces breakdown

Mueller M, Maluf K. Tissue Adaptation to Physical Stress: A Proposed "Physical Stress Theory" to Guide Physical Therapist Practice, Education, and Research. Phys Ther. PHYS THER April 2002 82:383-403

Effect of Physical Stress on Tissue Adaptation



Psychosocial Environment

- Individual stress levels
- Production pressures
- Overtime
- Quality of relationships at work
- Electronic monitoring
- Incentive pay
- Monotonous Work
- Little ability to affect daily decisions

Flags Concept in Lower Back Pain

- Red Flags
  - Serious pathology
    - Infection, Tumor, Fracture, Serious Neuro
- Yellow Flags
  - "Normal" but "Unhelpful" Reactions
  - Fear Avoidance Behavior
- Blue/Black Flags
  - Negative Worker perceptions of the workplace
    - Unsupportive supervisor
    - Conflicts with peers
    - Heavy work with no options for modified duty

Nicholas M, George S. Psychologically Informed Interventions for Low Back Pain: An Update for Physical Therapists. *Phys Ther.* May 2011; 91: 765-776, doi: 10.2522/ptj.201100278.

Factors Associated with Delayed Recovery

- Heavy Physical Demands
- Inability to modify work
- Lack of workplace support
- High Job Stress
- Job Dissatisfaction
- Low Expectation of Return-to-Work
- Fear of Re-Injury

Shaw WS, Van der Windt DA, Main CJ. Early patient screening and intervention to address individual-level occupational factors ("blue flags") in back disability. *J Occup Rehabil*. 2009;19:64–80

Early Reporting

- Reduces injury severity and chronicity
- Drives problem identification
- Drives ergo or health solutions

Early Intervention Program

- Employee reports early job related discomfort
- Physical Therapist follow-up within 24 hours on-site
- Conservative non-medical interventions
  - Advice in work techniques
  - Postures
  - General Reassurance
  - Education in healthy attitudes
  - Mobilization of various work groups that can alter causative factors
- Follow-up several times per week

Early Intervention Program

- Counseling and education to reduce fear of re-injury
- Recommend modified duty jobs
- Oversee ergonomic programs designed to modify physical demands
  - Enhance return-to-work expectation
  - Enhance job satisfaction
  - Educate supervisors to provide better social support and reduce job stress

Elements of Ergonomics Programs

- Management Leadership and Commitment
- Employee Participation
- Job Hazard Analysis and Control
- Skilled Medical Management
- Training
- Program Evaluation

Job Hazard Controls

- Methods to modify ergonomic risk
  - Change the work environment
  - Change the worker behavior
  - Improve the worker performance

Types of Controls

- Administrative
- Work Practice
- Engineering

Administrative Controls

- Job Rotation
- Job Enlargement
- Work flow change
- Stretch/rest breaks
- Restricted Duty

Work Practice Controls

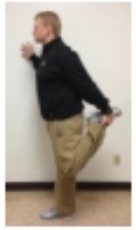
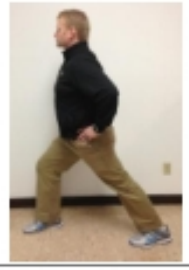
- Training in proper work methods
- Instruction in proper body mechanics
- Preventative Maintenance of Equipment
- New Employee Conditioning
- Return-to-Work Conditioning

Preventative Exercise Program

Schneider Electric – Columbia, Missouri

Tips for Success

- Count out hold times
- Feel the stretch – apply overpressure if needed
- Maintain good postures during stretching

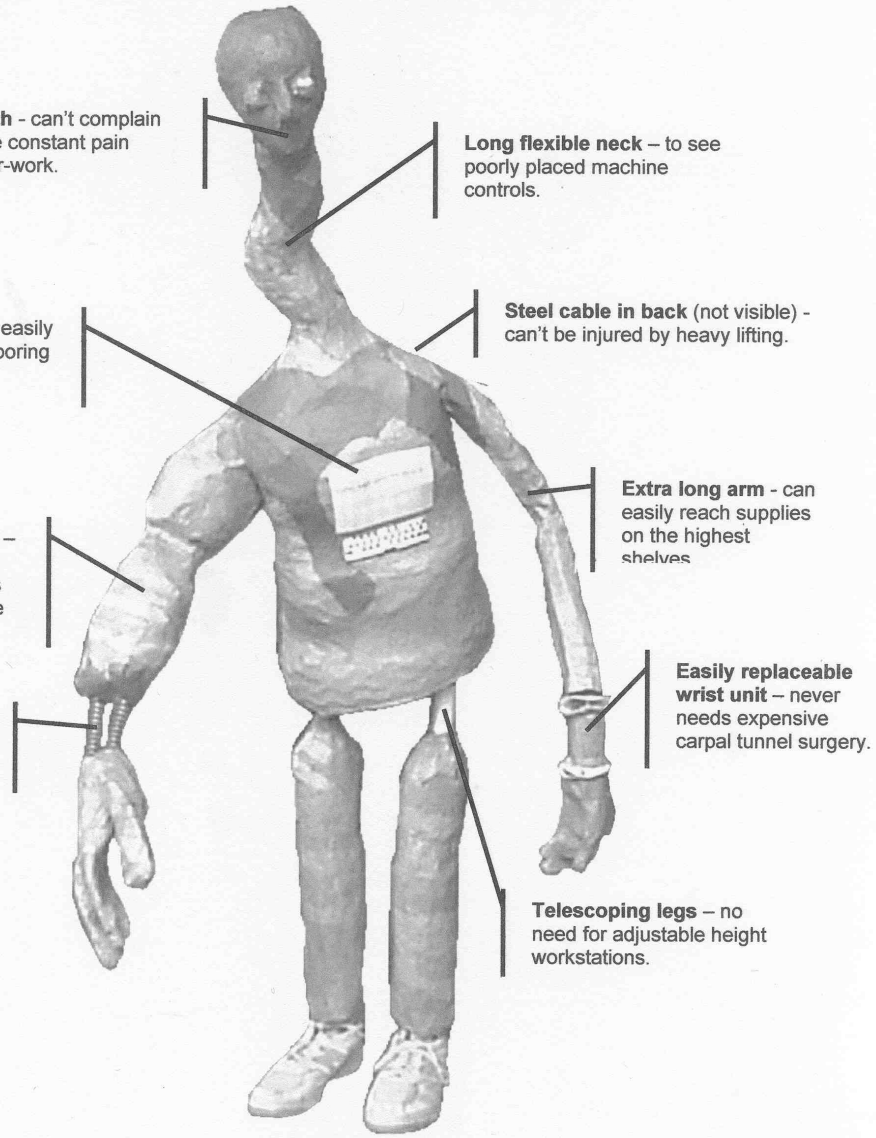
1. Wrist Extension – hold for 15 seconds	**2. Wrist Flexion** – hold for 15 seconds; repeat both hands	**3. Chin Tuck** – perform 5 times and hold for 1-2 seconds	**4. Neck Rotation** - perform 5 times and hold for 1-2 seconds each direction
			
5. Neck Side Bend – hold for 15 seconds each direction	**6. Shoulder Blade Squeeze** – hold for 15 seconds each (lower and higher squeeze)	**7. Hamstring Stretch** – hold for 15 seconds each leg	**8. Quad Stretch** – hold for 15 seconds each leg
			
9. Calf Stretch – hold for 15 seconds each leg	**10. Back Extension** – perform 5 times and hold for 1-2 seconds	**11. Trunk Rotation** – perform 5 times and hold for 1-2 seconds	**12. Core Contraction** – pull your stomach in, hold for 15 seconds
			

Engineering Controls

- Change the physical design of the workplace
- Improve fit for the person
- Most Effective Control method
- Higher Up Front Costs
- Best to do during Early design phases
- Most supported by ergonomics literature

Ergoman

The Perfect Employee



No mouth - can't complain about the constant pain from over-work.

Long flexible neck – to see poorly placed machine controls.

Built-in computer - easily be programmed for boring repetitive work.

Steel cable in back (not visible) - can't be injured by heavy lifting.

Extra long arm - can easily reach supplies on the highest shelves

Super strong arm – When quality assurance requires brute force to make parts fit.

Easily replaceable wrist unit – never needs expensive carpal tunnel surgery.

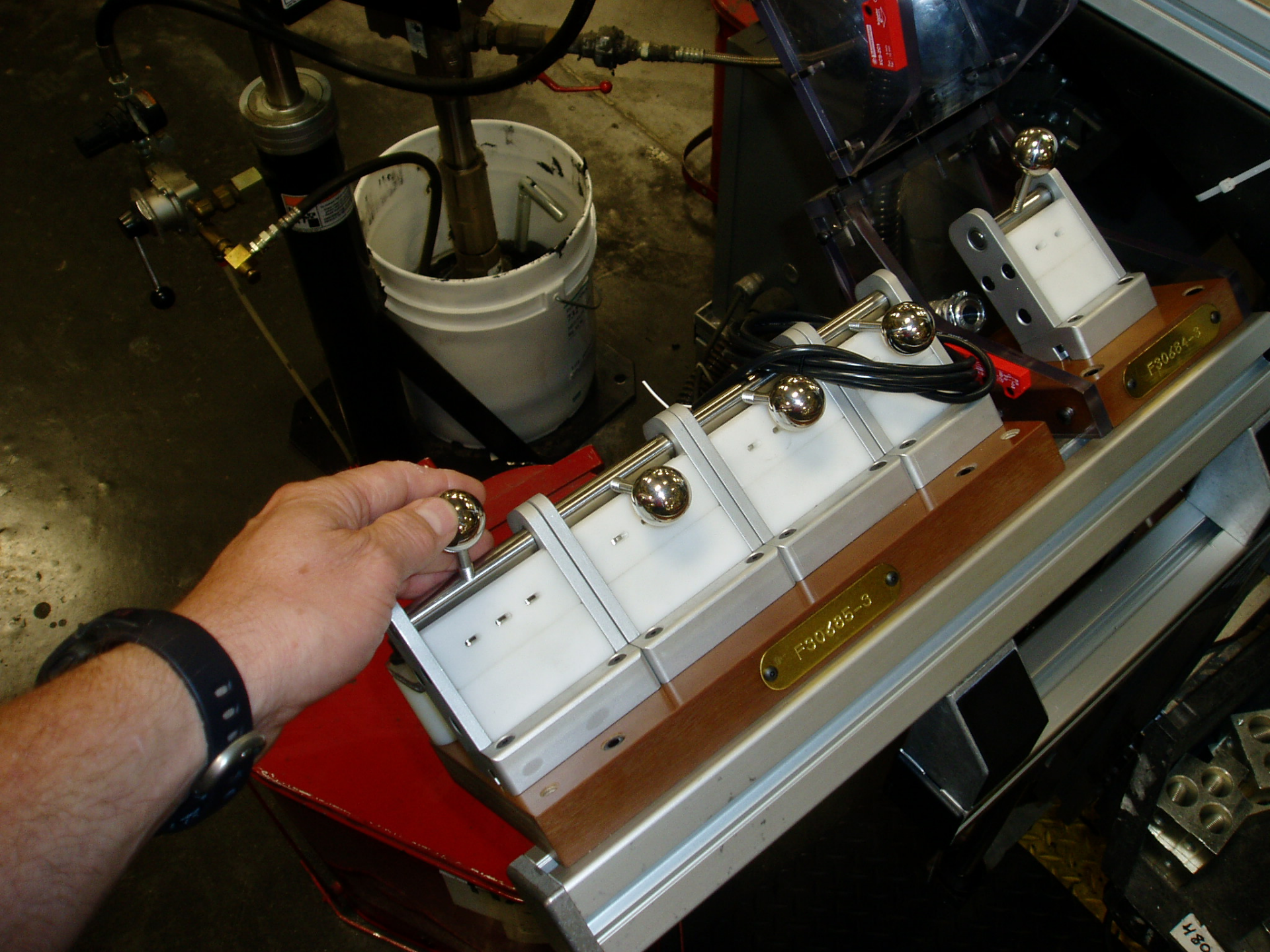
Wrist Springs – Absorb the shock of vibrating power

Telescoping legs – no need for adjustable height workstations.

Created by Jay Herzmark, AFSCME local 1488

Labor Donated

Some Examples of Ergonomic Solutions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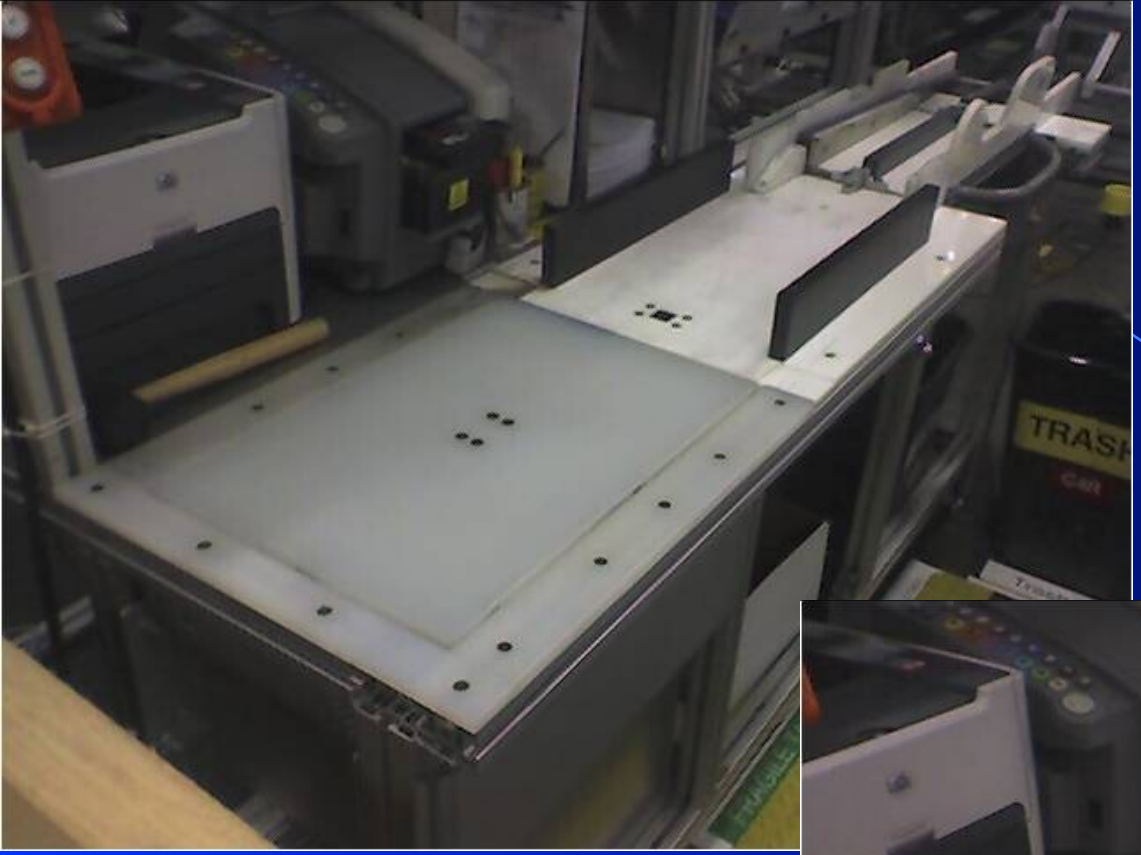
Schneider Scrap
Missouri Scrap


C4/B1-Cover Station Tool Board


TRASH


TRASH
Trash


FOSTER

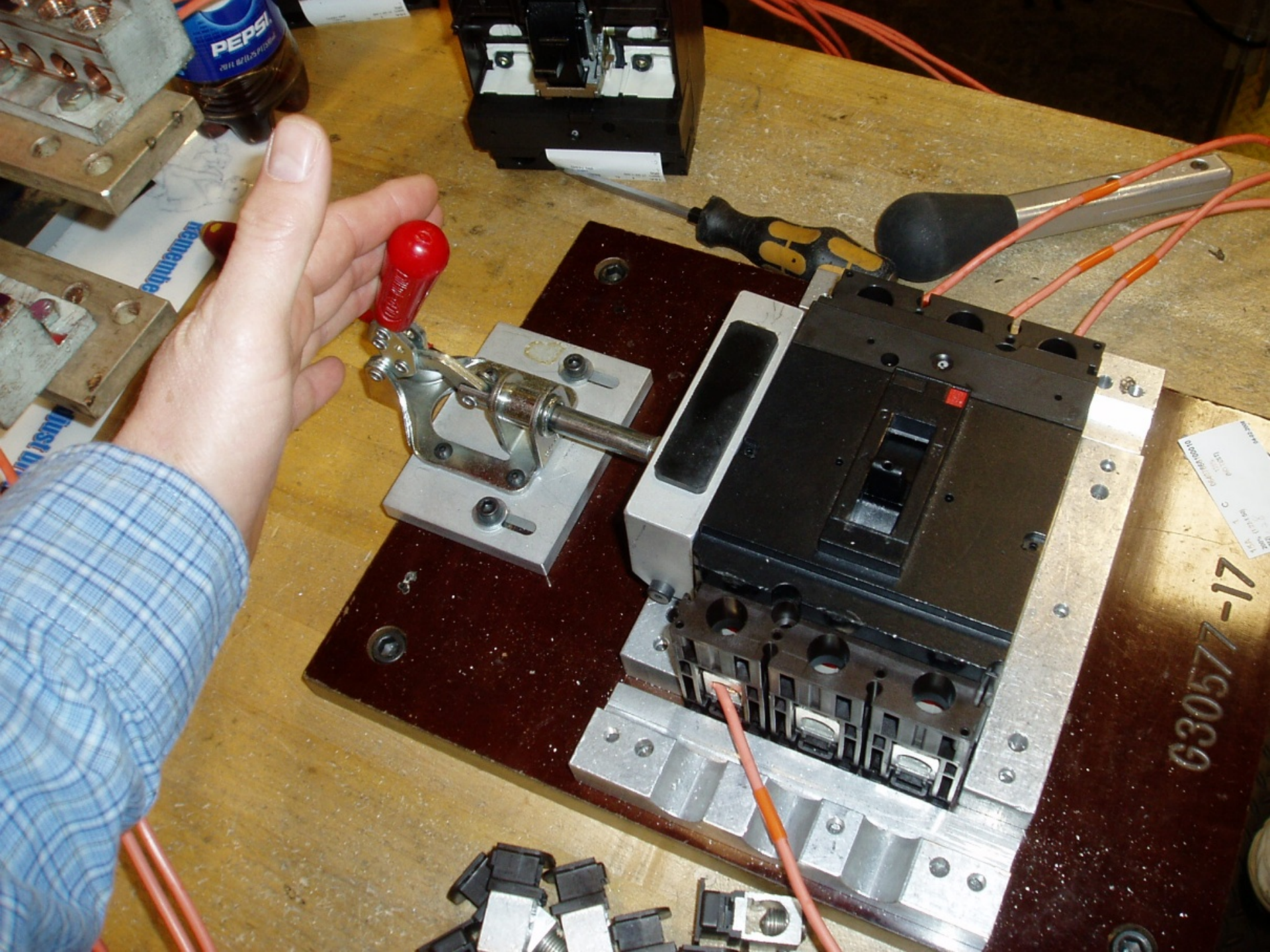

CAUTION


CAUTION

Best Practice: Moveable Pallet Skid - MH

Before

After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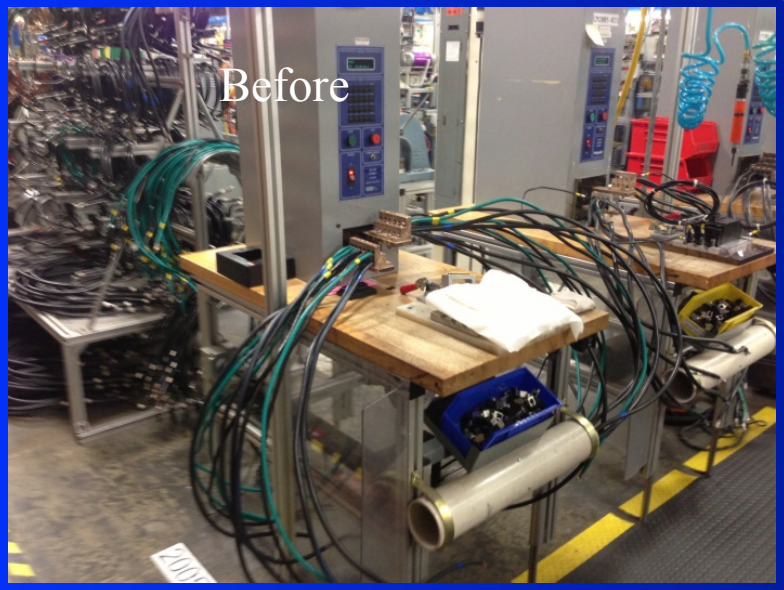
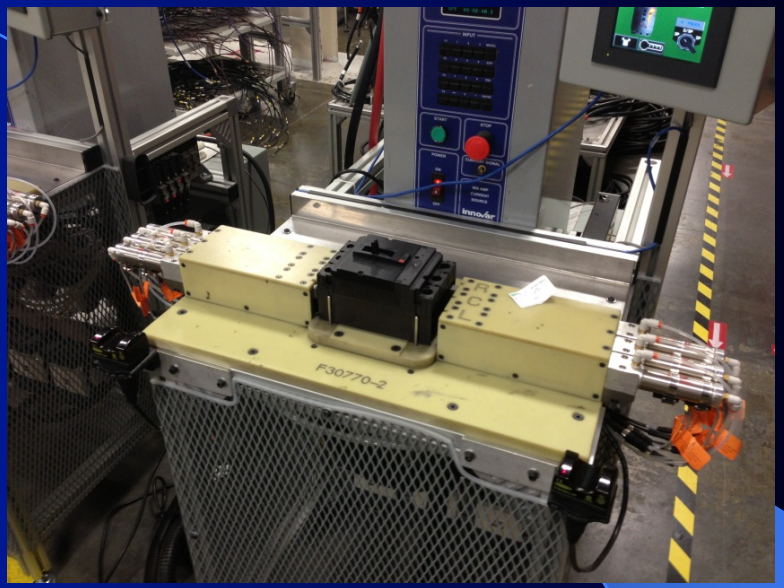
G30577-17

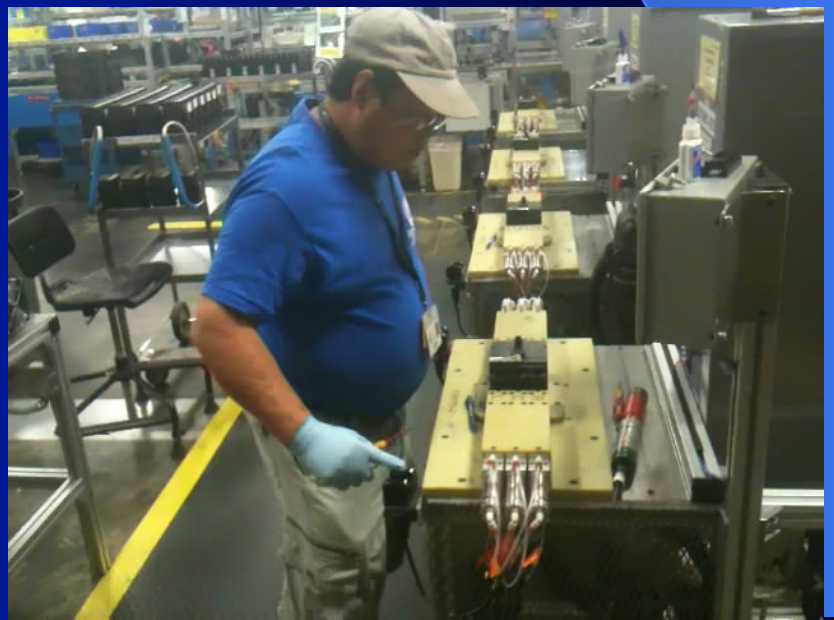

BUNTING
Magnetics Co.

K36706

Mille Auto Checktest







"No wonder your arm aches. Shackles should be placed at eye level. Man, it's an ergonomic nightmare down here."

Company A

- Light manufacturing plant
- 200 employees
- High OSHA recordable rates and workers compensation costs
- Loss Control manager – strong interest in on-site intervention
  - Felt that physical therapists might be the ideal professional to deliver these services

Company A

- Physical Therapy provided on-site for worker compensation cases
- This evolved into on-site presence of 16 hours per week
- Services included:
  - Early Intervention
  - Ergonomic Screening
  - In-Depth Ergonomic Evaluation
  - Employee ergonomic and wellness education

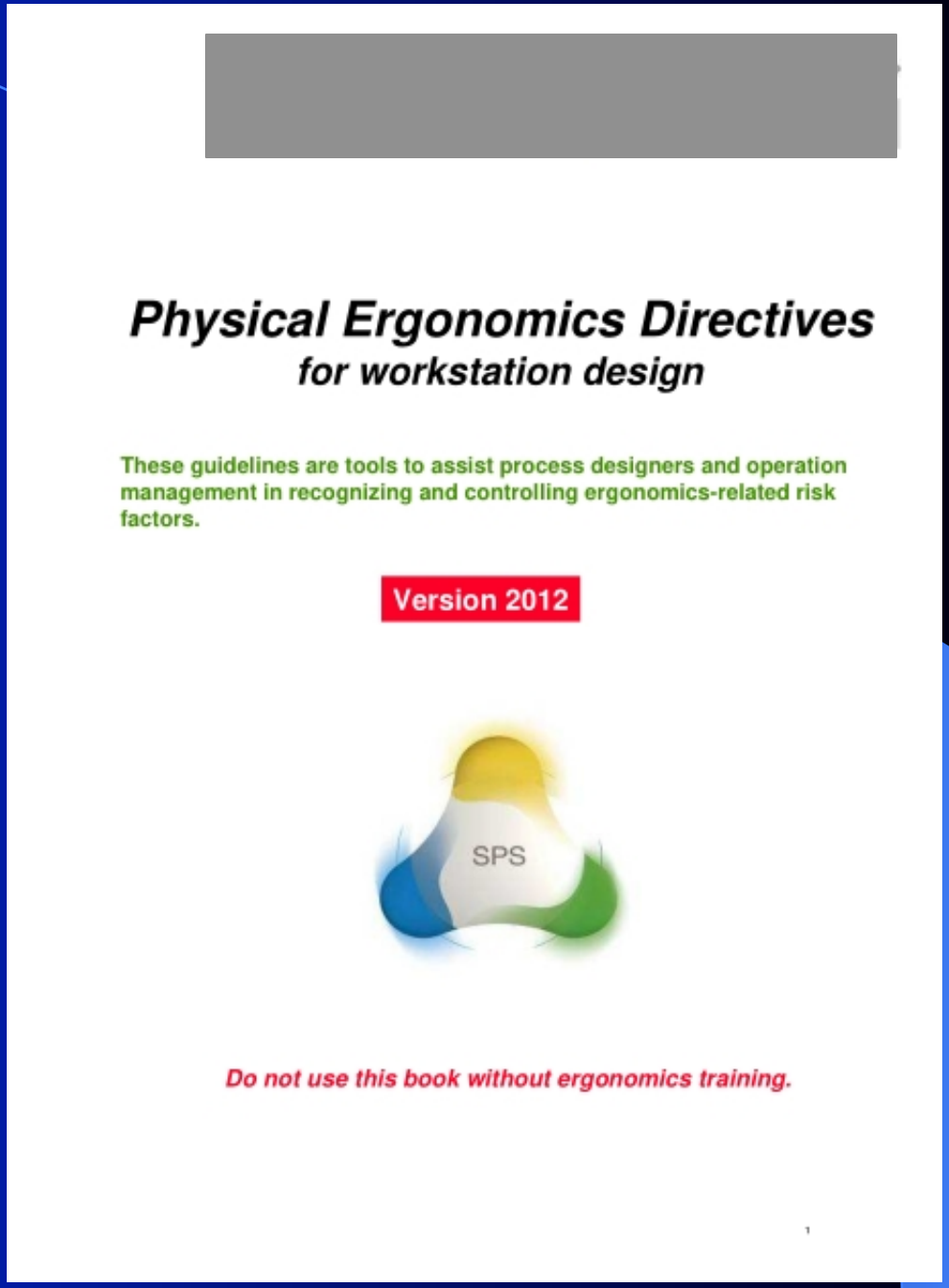
Drivers for Success

- Positive relationship with employees
  - Established through 1 on 1 contact, frequent training opportunities
  - Good track record of solving employee MSD problems
- Strong management commitment and support
  - Mandate/encourage Early Reporting
  - Track all cases and provide support

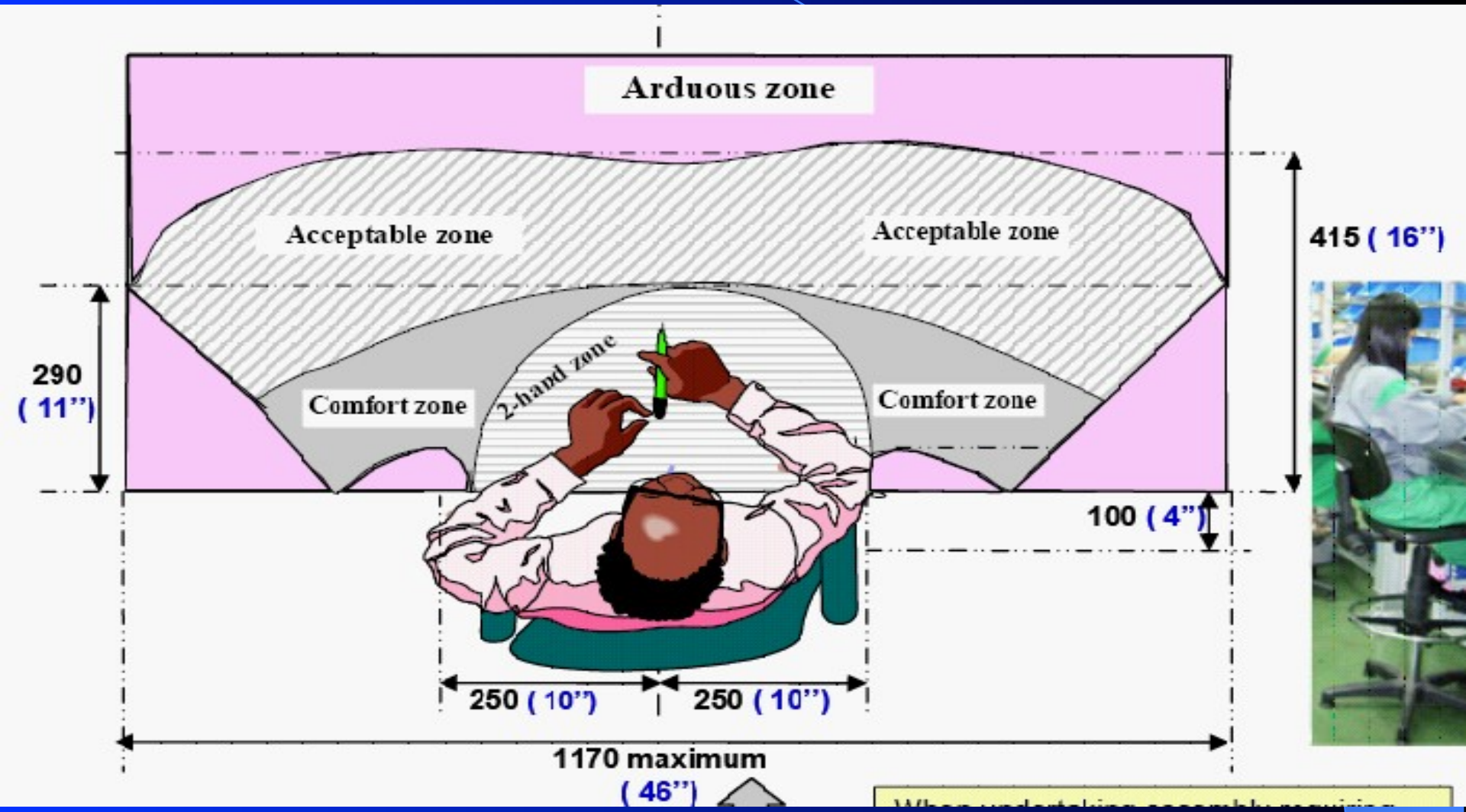
Drivers for Success

- Close management of workers compensation cases
  - Exclusive use of occupational medicine physicians
  - Good modified duty program
- Highly effective front line supervisors
- Changes in manufacturing that may have reduced exposures
- Strong engineering and fabrication ability to make engineering ergo improvements

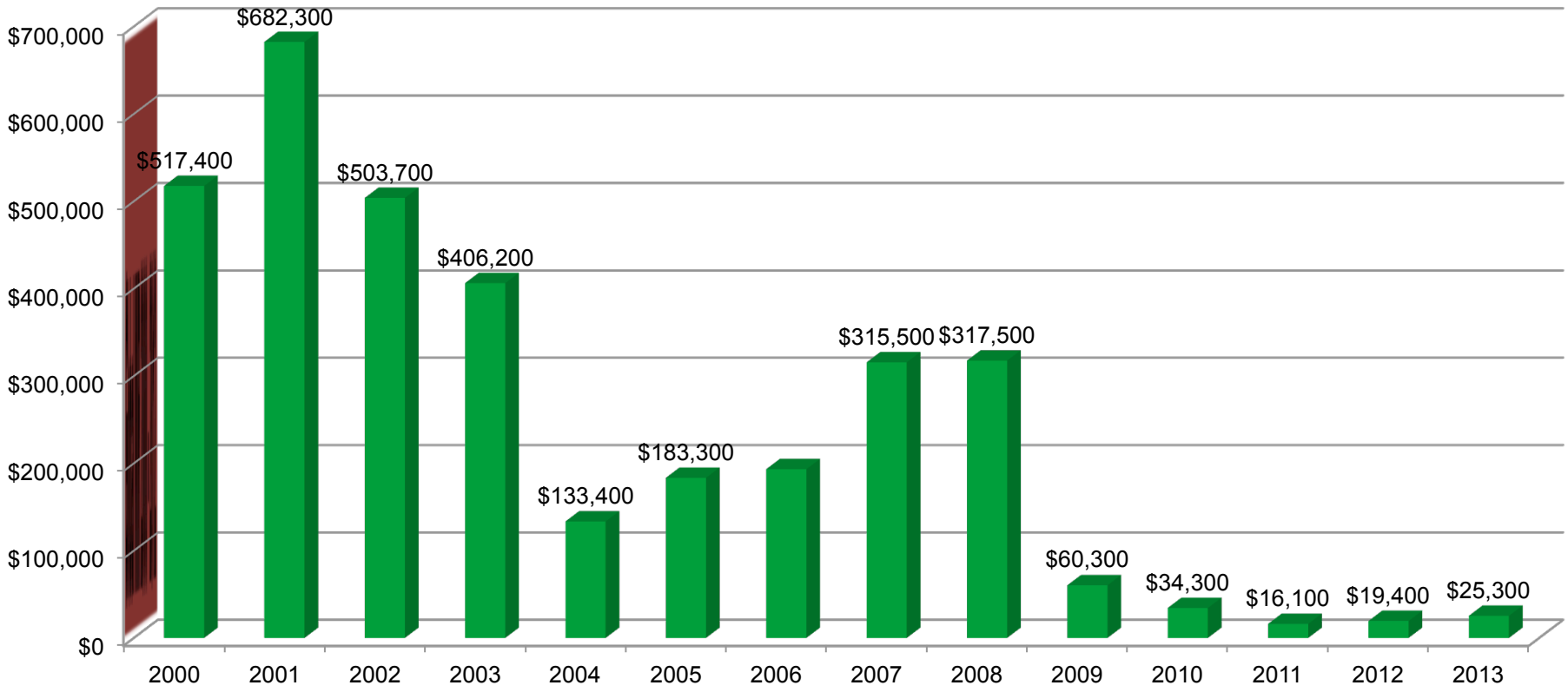
Company A Ergonomic Guidelines



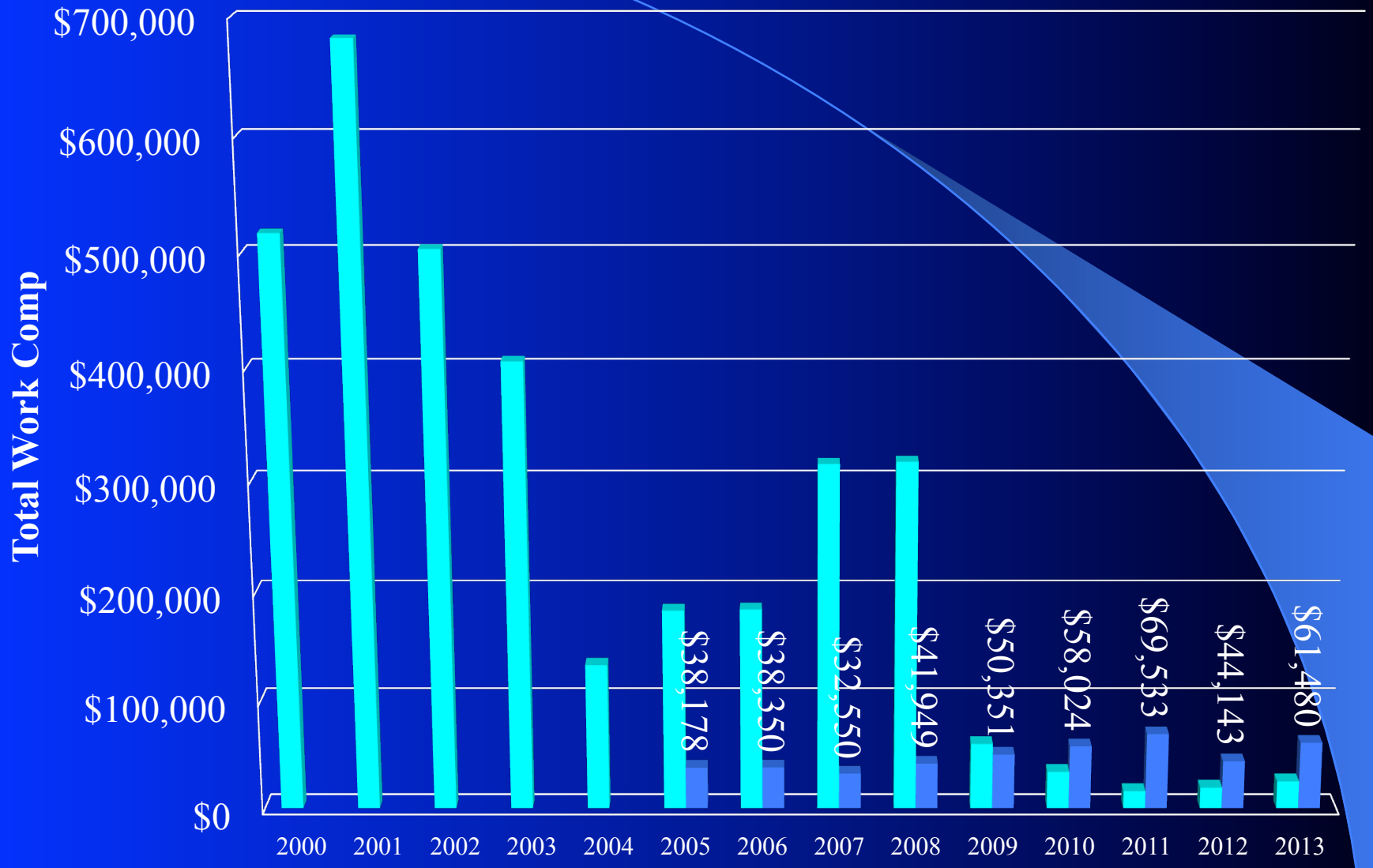
Working Zones



Company A Total Workers Compensation Costs



Case Costs vs. PT Costs



Case Study – Low Back Pain

Case Study – Low Back Pain

- 50 y.o., 6’3” male assembly line worker, 2nd shift
- Excellent employee – enthusiastic and volunteers for all opportunities and overtime
- History of lower back pain in previous heavy demand jobs
- Recently started working on different assembly line

Case Study – Low Back Pain

- Started to notice low back pain for approximately two weeks
- Over weekend experienced acute low back pain necessitating visit to ER – He reports he was worried about kidney problems or other systemic illness primarily
- Broadway Ergo notified of employee complaints by supervisor via email. Response to employee within 24 hours

Case Study – Low Back Pain

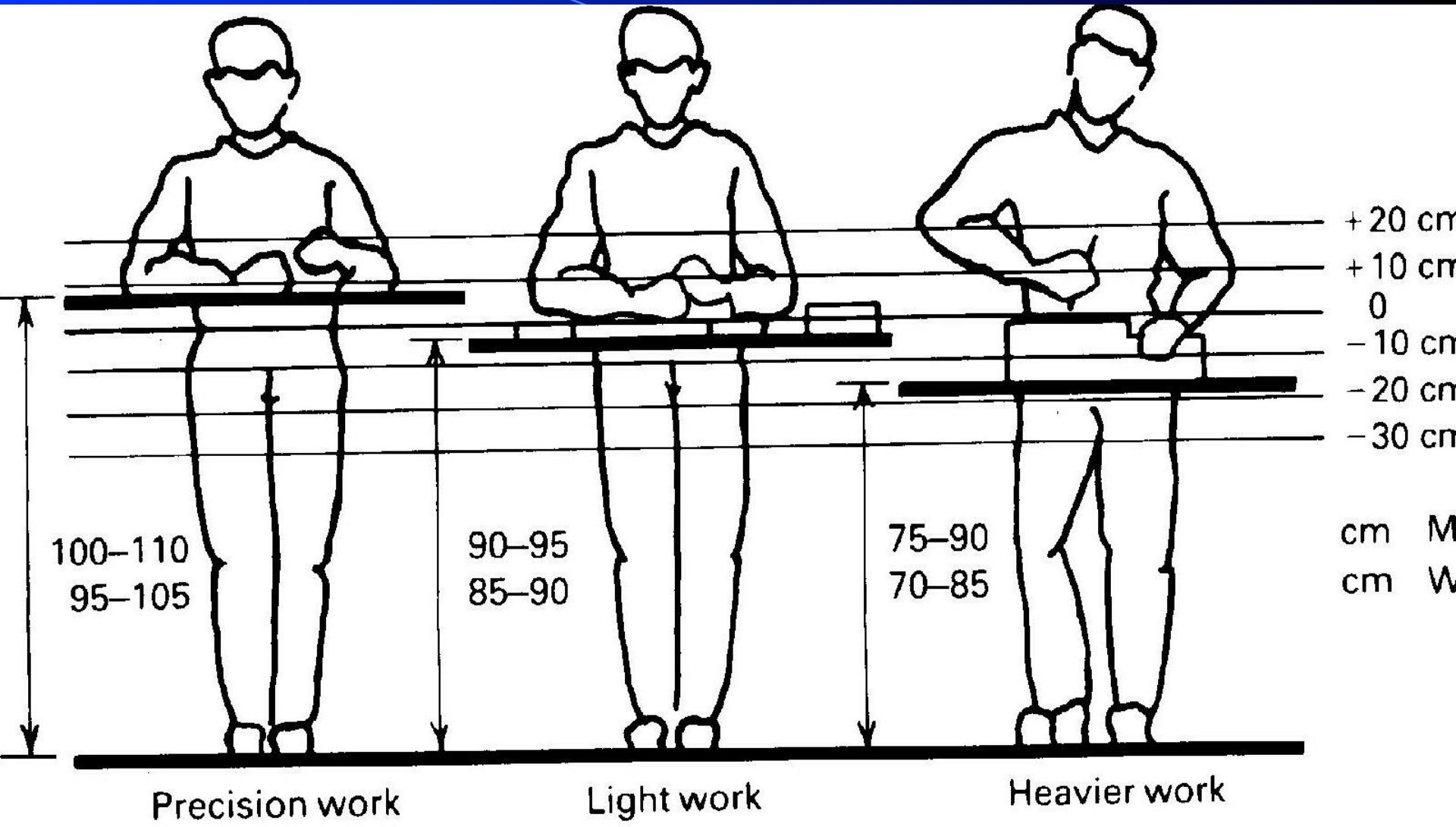
- Screen of employee reveals non-specific low back pain with no leg pain or neurologic signs. Red flag screens – no weight loss, constitutional symptoms, night pain, hx of cancer, trauma - no need for medical referral
- Discussion with employee reveals high levels of fear avoidance, catastrophization and anxiety regarding lower back pain.
- History of family members becoming disabled due to back pain

Case Study – Low Back Pain

- Quick Ergonomic Screen
  - QEC with employee
    - High Low Back Scores
- In-depth Ergonomic Assessment
  - Assembly line generally 1” lower than most other lines in plant
  - Work content – mixture of light and heavy assembly tasks
  - Lifting of breaker at end of assembly from line to packing box = 32 lb. NIOSH Lifting Index = 1.20

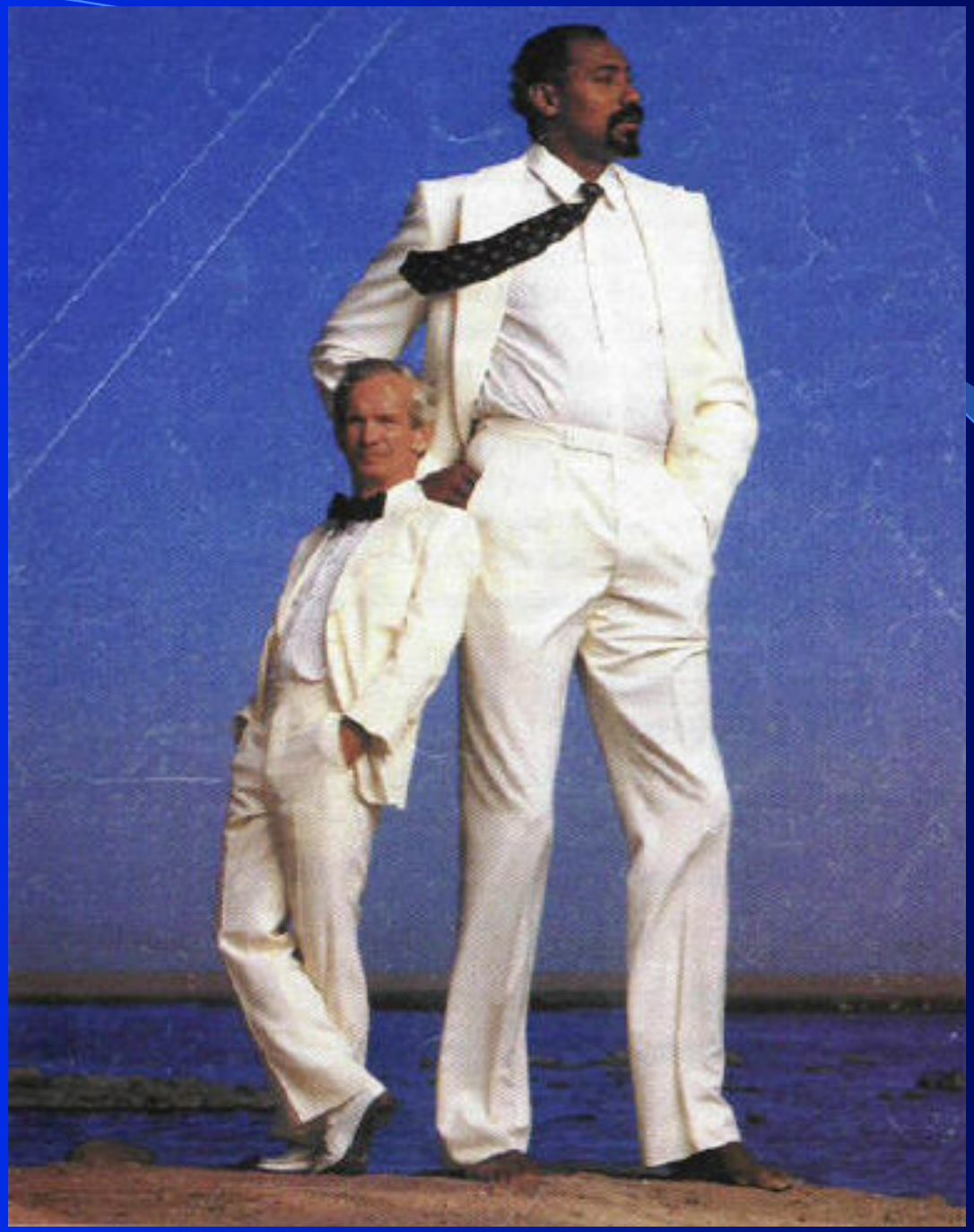
Case Study – Low Back Pain

- Visual Loss – Far Sightedness
  - Safety glasses with corrective lenses
- Tendency to Forward Bend/Flex while working
  - Training in body mechanics
- Jib Crane Hoist – under-utilized by employees and functioned poorly
  - Crane updated and improved to enhance operator acceptance


+20 cm
+10 cm
0
−10 cm
−20 cm
−30 cm
100–110
95–105
90–95
85–90
75–90
70–85
cm M
cm W
Precision work
Light work
Heavier work

Ergonomic Design Specifications for Preventing LBP

- Optimal work heights
  - Precision work 4 – 6” above elbow height
  - Light work 1 – 3” below elbow height
  - Heavy work 4 – 6” below elbow height



Wilt Chamberlain 7’ 1”

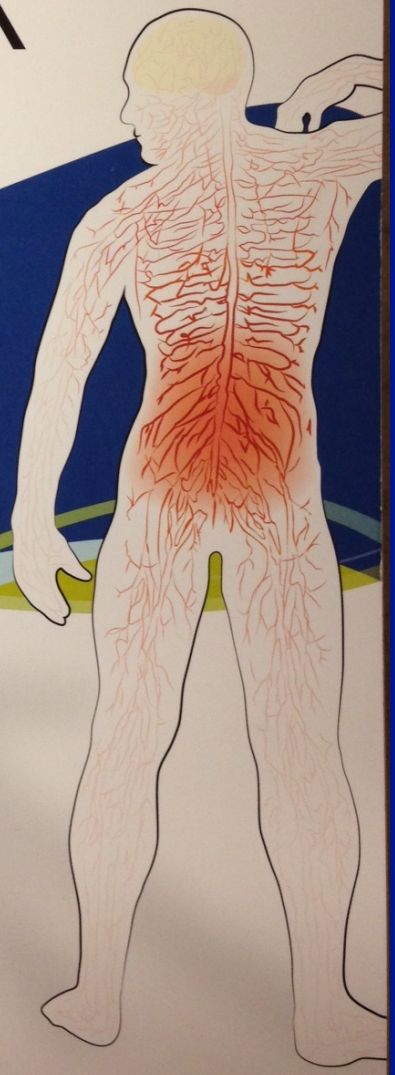
Willie Shoemaker

4’ 11”


HUSKY
LOCTITE
498

EVERYONE HAS BACK PAIN

Neuroscience Education for Patients with Back Pain



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We must go the extra mile to meet their needs and exceed their expectations.
DIGITIZE
Our customers expect a best-in-class digital experience. They want everything online, connected, and working fast.
INNOVATE
We have the power to make things work better, faster, and wiser. By listening to our customers and finding better ways to answer their challenges, we make remarkable things happen.
STEP UP
Employees are the face of Schneider Electric. When customers come to us for help, we want them to find people who understand their needs and provide expertise. Internally, we need skilled professionals at every level, in every role.
SIMPLIFY
As we reduce the complexity of our organization and our internal processes, we become more efficient, easier to work with, and easier to recommend.
FRAGI

Physical Therapist Based Programs

- Disadvantages
  - Costs: $80 - $200/hour
  - Shortage of PT's
  - State Practice Act Limitations
  - PT Intervention may inadvertently trigger OSHA recordability
    - Therapeutic Exercise
    - Diagnosis

Physical Therapist Based Programs

- Advantages
  - Demonstrated evidence of cost reduction
  - Early Injury Intervention
    - Effective screening for medical referral
    - Reassurance in benign conditions
    - Avoid unnecessary entry into medical system
  - Skilled Education in Wellness and Prevention
  - Ergonomic Analysis and Screening
  - Oversee Exercise Programs
  - Modified Duty/Fitness for Duty
  - ADA Accommodation

Questions?

BROADWAY ERGONOMICS

Physical Therapy. Wellness. Performance.

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